In-plane Wavelength Division De-Multiplexing Using Photonic Crystals

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We demonstrate a novel concept for *in-plane* coarse wavelength division de-multiplexing in integrated photonic circuits utilizing planar photonic crystal waveguides (PhCWs) fabricated in a silicon-on-insulator material (Fig. 1). The filtering of wavelength channels is realized by shifting the cut-off frequency of the fundamental photonic bandgap mode. The shift is obtained by modifying the size of the border holes in consecutive sections of the PhCW [1]. Simulations and experimental proof-of-principle of the four-channel de-multiplexer (Fig. 2) will be presented.

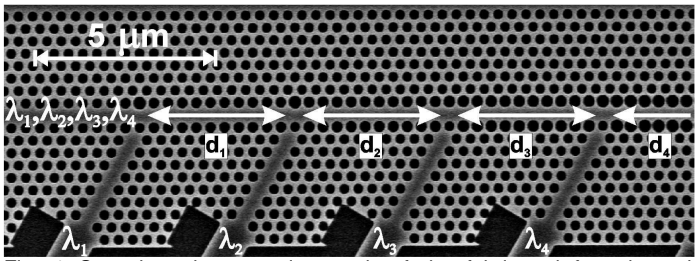

Fig. 1 Scanning electron micrograph of the fabricated four-channel de-multiplexer with consecutive sections of modified border holes.

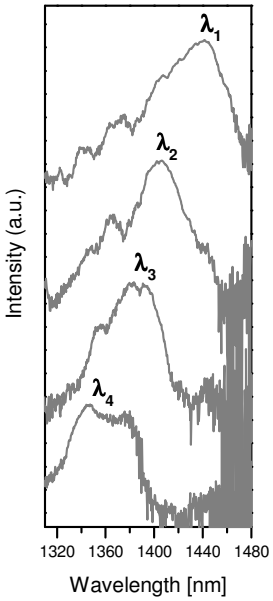

Fig. 2 De-multiplexed channels from the fabricated component.

[1] A. Adibi *et al.*, *Electron. Lett.*, **36**, pp. 1376-1378 (2000)